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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/720,974 | 11/24/2003 | Hayden C. Cranford JR. | CH920030065US1 | 5196 |

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| EXAMINER | |
|---|---|
| LU, JIA | |
| ART UNIT | PAPER NUMBER |
| 2611 | |

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
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| 3 MONTHS | 03/23/2007 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/720,974 | CRANFORD ET AL. | |
| | Examiner | Art Unit | |
| | Jia Lu | 2611 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *24 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) *19 and 20* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4,5,8,9,15-18 and 21-23* is/are rejected.

7)☒ Claim(s) *3,6,7 and 10-14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

***Election/Restrictions***

Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-18, 21-23, drawn to a method and apparatus for jitter detection, classified in class 375, subclass 371.

II. Claims 19, 20, drawn to an apparatus for jitter generator, classified in class 375, subclass 226.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct if they do not overlap in scope and are not obvious variants, and if it is shown that at least one subcombination is separately usable. In the instant case, subcombination I has separate utility such as detecting jitter in a transmitted signal from a transmission channel. See MPEP § 806.05(d).

The examiner has required restriction between subcombinations usable together. Where applicant elects a subcombination and claims thereto are subsequently found allowable, any claim(s) depending from or otherwise requiring all the limitations of the allowable subcombination will be examined for patentability in accordance with 37 CFR 1.104. See MPEP § 821.04(a). Applicant is advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to

provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application.

Because these inventions are independent or distinct for the reasons given above and there would be a serious burden on the examiner if restriction is not required because the inventions have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with applicant's representative on 2/20/07 a provisional election was made with traverse to prosecute the invention of group I, claims 1-18, 21-23. Affirmation of this election must be made by applicant in replying to this Office action. Claims 19 and 20 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1, 4, 8, 9, 15, 16, 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guo in US patent 5,452,333.

a. Regarding claim 1, Guo describes a method of jitter detection comprising sampling at differing sample times a section of a signal transmitted via a transmission channel (figure 4, elements 131, 132, 133), determining the total number of edges in a sampled section (figure 4, elements 81-84), analyzing neighboring sample values (column 5, lines 60-column 6, lines 20), determining a figure of merit from the statistical value and total number of edges (column 4, lines 45- 55, "ruler"), and deriving a jitter corresponding to the figure of merit (column 2, lines 7-11 and figure 3, element 71). While Guo does not describe analyzing neighboring values to form a statistical value, he describes analyzing neighboring values to form decisions that are based on certain outputs (column 5, lines 60- column 6, line 20). It would be obvious to one ordinarily skilled in the art to interpret logical outputs as statistical values as they assist in making decisions. Further, while Guo does not describe deriving a jitter by using one of a jitter-versus-figure of merit curve and a look-up table, Guo uses a table that resembles a jitter-versus-figure of merit curve (figure 7) to explain the process of decision logic in determining jitter. It would be obvious to one ordinarily skilled in the art to incorporate this table as a reference into the Guo's jitter detection method in order to provide a more speedy jitter determination while reducing the power used in calculations.

b. Regarding claim 4, Guo shows determining of the total number of edges is determined as the number of pairs of neighboring sample values which are unequal (column 5, lines 20-50).

c. Regarding claim 8, Guo shows deriving a statistical value from the number of early edges (figure 3, element 81 and 83).

d. Regarding claim 9, Guo shows deriving a statistical value from the number of late edges (figure 3, element 82 and 84).

e. Regarding claim 15, Guo shows the transmission channel to be an asynchronous serial link (column 1, lines 28-31).

f. Regarding claim 16, Guo shows the transmission channel to be a synchronous serial link (column 1, lines 24-26).

g. Claim 21 reads on the limitations of claim 1, further, Guo shows a transmitter and a receiver (column 1, lines 58-66)

2. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Guo in US patent 5,452,333, in view of Okuda in US application publication 2003/0189985 A1. While Guo does not describe sampling of the signal at least twofold, Okuda does (paragraph 0097). It would be obvious to one ordinarily skilled in the art to oversample a signal with jitter in order to obtain required and accurate samples.

3. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Guo in US patent 5,452,333, in view of Casper in US patent 7,120,838. While Guo does not describe forming statistical value from a derivation from the nominal edge distribution, such a feature is well known in the art, as described by Casper (column 3, lines 35-40). It would be obvious to one ordinarily skilled in the art to characterize jitter using a nominal edge distribution in order to provide a more accurate jitter estimation based on the overall noise pattern.

4. Claims 17 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guo in US patent 5,452,333, in view of Livolsi in US patent 6,404,257 B1. While Guo does not describe pre-emphasizing the signal at the transmitter in order to account for expected jitter, Livolsi does (see abstract). Such a feature of pre-distortion is well known in the art and it would be obvious to one ordinarily skilled in the art to send a feedback from Guo's jitter correction system to the transmitter in order to efficiently account for expected jitter and obtain better overall transmission.

5. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Guo in US patent 5,452,333, in view of Gfeller in US application publication 2002/0031093 A1. Guo describes a method of jitter detection comprising sampling at differing sample times a section of a signal transmitted via a transmission channel (figure 4, elements 131, 132, 133), determining the total

number of edges in a sampled section (figure 4, elements 81-84), analyzing neighboring sample values (column 5, lines 60-column 6, lines 20), determining a figure of merit from the statistical value and total number of edges (column 4, lines 45- 55, "ruler"), and deriving a jitter corresponding to the figure of merit (column 2, lines 7-11 and figure 3, element 71). Guo does not describe analyzing neighboring values to form a statistical value, however he describes analyzing neighboring values to form decisions that are based on certain outputs (column 5, lines 60- column 6, line 20). It would be obvious to one ordinarily skilled in the art to interpret logical outputs as statistical values as they assist in making decisions. Further, while Guo does not describe deriving a jitter by using one of a jitter-versus-figure of merit curve and a look-up table, Guo uses a table that resembles a jitter-versus-figure of merit curve (figure 7) to explain the process of decision logic in determining jitter. It would be obvious to one ordinarily skilled in the art to incorporate this table as a reference into the Guo's jitter detection method in order to provide a more speedy jitter determination while reducing the power used in calculations. While Guo does not describe using the method in a computer program product, such a feature is well known in the art (for example Gfeller shows this feature in using a jitter detection method, see abstract and paragraph 0033). It would be obvious to one ordinarily skilled in the art to store and use Guo's method in a computer readable medium in order to enable easy and more available access.

6. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Guo in US patent 5,452,333, in view of Carballo in US application publication 2005/0032491 A1. While Guo does not describe using a phase rotator to define sampling times, such a feature is well known in the art as shown by Carballo (paragraph 0027). It would be obvious to one ordinarily skilled in the art to a phase rotator in Guo's sampling circuit in order to account for phase shifts and provide better data samples.

***Allowable Subject Matter***

Claims 3, 6-7, 10-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jia Lu whose telephone number is 571-272-6042. The examiner can normally be reached on 8:30-4:30, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jia Lu
Examiner
Art Unit 2611

DAVID C. PAYNE
SUPERVISORY PATENT EXAMINER